and Disease Registry

Memorandum

Date August 8, 1990

From Environmental Health Scientist, Emergency Response and Consultation Branch (ERCB), Division of Health Assessment and Consultation (DHAC), ATSDR (E32)

Subject Health Consultation: Himco Landfill
Elkhart, Elkhart County, Indiana

To Louise Fabinski
ATSDR Regional Services Representative
U.S. EPA Region V, 5HSM-12
Chicago, Illinois
Through: Director, DHAC, ATSDR (E32)
Chief, ERCB, DHAC, ATSDR (E32) for EKG

BACKGROUND AND STATEMENT OF ISSUES

The United States Environmental Protection Agency (U.S. EPA) has asked the Agency for Toxic Substances and Disease Registry (ASTDR) to evaluate the analytical results of groundwater samples taken at residences near the Himco Landfill Site in April 1990. The Himco Landfill Site is listed by the U.S. EPA on the National Priorities List (NPL). Specifically, ATSDR was asked to determine if the levels of sodium and other metals and inorganic substances in the water pose a threat to public health. Citizens have complained that their water tastes bad and gives off strange odors.

The Himco Landfill site is located in Elkhart County, Elkhart, Indiana and consists of about 40-acres of low-lying marsh land. Operating from 1960 to 1976, the landfill accepted mainly medical and pharmaceutical wastes but apparently, also accepted industrial wastes. The groundwater beneath the site is contaminated with sodium, cobalt, selenium, beryllium, cadmium, copper, manganese, and other inorganic substances. A plume of contamination moving toward nearby residences was reported in a United States Geological Survey (USGS) hydrological study of the Elkhart area in 1981. The USGS concluded the origin of the plume was from the landfill. Groundwater in the area is used as a potable water source for residences adjacent to the site.

There are six residences located immediately downgradient of the landfill. Water samples from private wells of these residences showed contamination as early as 1972. Groundwater downgradient from the landfill was tested again in September 27, 1984. Results from at least one monitoring well showed concentrations of the following [reported as micrograms (ug) per liter (L) or parts per billion (ppb)]: aluminum, 350,000; iron, 146,000; lead, 401; manganese, 2150; zinc, 1630; vanadium, 326; chromium, 461; nickel, 422; and arsenic, 200.

The residents have continued to report problems with the drinking water. They also report that individuals in the contaminated area are hypertensive and have reported other health problems which they believe are occurring more frequently than in other communities in the area. Hypertension has been reported in individuals drinking water from wells S61, S62, and S63. These wells have the highest levels of sodium ranging from 236 to 445 milligrams (mg) per L or parts per million (ppm).

A draft Preliminary Health Assessment of the site was completed by the State of Indiana in 1989 under a Cooperative Agreement with ATSDR. Finalization of the report is expected during the last quarter of FY90.

DOCUMENTS AND INFORMATION REVIEWED

1. Sampling action report conducted by Technical Assistance Team (TAT) of groundwater on and off site, June 28, 1990.

2. USGS Report: Hydrologic and Chemical Evaluation of the Ground Water Resources of Northwest Elkhart Counties Indiana. Geological Survey Water-Resources Investigations, 81-53, October 1981. 1978 - 79.

3. The ATSDR Site Summary, February 1988.

4. Draft Preliminary Health Assessment Himco Dump, prepared by the Indiana State Board of Health under Cooperative Agreement with ATSDR, Dec. 22, 1989.

5. Superfund Record of Communications, Dated July 17,1990, and July 20, 1990.

6. Casarett and Doull's, Third Edition, 1986.

7. Drinking Water and Health, NAS, 1977.

DISCUSSION

Recent groundwater samples taken from several wells downgradient from the landfill showed markedly elevated concentrations of sodium, some as high as 446 ppm. Findings from the USGS report substantiate that Himco

Landfill is the probable source of the high levels of sodium in downgradient wells since levels of sodium in upgradient wells are more typical of county groundwater which contain approximately 8 ppm of sodium. No other contaminants were detected at elevated concentrations.

Elevated sodium intake has been correlated with the prevalence of hypertension in various populations throughout the world. It has been reported to ATSDR that a number of the residents claim to have hypertension. Because intake restrictions of sodium are often part of hypertenive therapy, the levels of sodium in downgradient wells could represent a significant health concern. Typically prescribed low sodium diets attempt to limit sodium intake from food and water to either 2.0, 1.0, or 0.5 grams (g) in a 24 hour period. It has been suggested by the National Academy of Sciences (NAS), that where water supplies contain more than 20 ppm, dietary restriction to less than 1.0 g is difficult to achieve and maintain. Levels of sodium in wells S61, S62, and S63 exceed by 12-22 times that recommendation.

CONCLUSIONS

Based on the available information ATSDR concludes that concentrations of sodium in residential well water downgradient from the Himco Site represent a chronic health threat to the affected residents. Long term ingestion of high concentrations of sodium are believed to be associated with the development of hypertension and would complicate clinical treatment of hypertensive patients on salt-restricted intakes.

RECOMMENDATIONS

1. Provide an alternative source of potable water to households served by wells S61, S62, and S63.

2. Continue periodic monitoring of contaminant plume to assure other area residents are not exposed to site-related contaminants.

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